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Information leaflet:
Resistance Requirements of Offset Printing Inks for Print Finishing

Sheet-fed offset prints may undergo print finishing:

a) to protect the surface of the print against mechanical or chemical use,

b) to improve or modify the appearance of the print.

Due to the various methods of print finishing (varnishing, calendering, film lamination) there are influences on the print which may cause unwelcome changes in the appearance, if the resistance properties of the inks used are not suited to the requirements. In certain circumstances, the unsuitability of an ink for an intended finishing process appears initially as a distinct fading (e.g. with light shades). The following information will help to avoid such problems.

1. Varnishing with Offset Overprint Varnish

Oil based offset overprint varnishes can be considered as unpigmented offset inks. There are no special requirements regarding the resistance properties of the printing inks to be used.

2. Varnishing with Dispersion Coating

Normally dispersion coatings are slightly alkaline. Therefore, the printing inks to be used have to be alkali-resistant (DIN 16 524, Part 2). Process Magenta is an exception. In spite of its low alkali-resistance, this ink can be varnished without problems, using dispersion coatings.

There are individual cases of dispersion coatings containing solvents. In these cases the printing inks to be used should be solvent resistant (alcohol)(DIN 16 524, Part 1, Section 4.3.1 Solvent(a)). Please contact your coatings supplier for details.

3. Varnishing with UV-Curing Coatings

The printing inks to be used must be alkali-resistant (DIN 16 524, Part 2) and solvent-resistant to mixed solvents (DIN 16 524, Part 1, Section 4.3.1. Solvent (b)). For Magenta, the same exception applies as in Section 2 above. Offset inks containing Fanal® pigments can be lacquered with special amine-free coatings. It is necessary to consult with the printing ink and coating manufacturer.

4. Solvent Based Coatings (NC-Varnish)

Printing inks to be varnished in a coating unit using solvent based coatings, should be alcohol and solvent resistant (DIN 16 524, Part 1, Section 4.3.1 Solvents (a) + (b)).

If varnished prints are also to be calendered, heat resistance up to 120 °C is also required.

For coatings containing plasticiser Section 6 applies.

5. Lamination with Plasticiser-Free Films

If film lamination is to be applied, different types of adhesive, requiring varying resistance properties of the inks, can be used.

a) 2-pack adhesive (solvent based or solvent-free).
The offset inks must be both alcohol and solvent resistant (DIN 16 524, Part 1, Section 4.3.1. Solvents (a)+(b)).

b) Dispersion Adhesive (water-based)
The printing inks must be alkali-resistant (DIN 16 524, Part 2),and solvent resistant to mixed solvents (DIN 16 524, Part 1, Section 4.3.1 Solvents (a)+(b)). Process Magenta is an exception.

6. Lamination with PVC films containing Plasticiser and/or Plasticiser based adhesives

Further to the previously mentioned property requirements in Section 5 above, it should be noted, that when using plasticiser based PVC film (or adhesive), that offset inks can re-soften through plasticiser migration. In this case, it is absolutely necessary to consult with the ink supplier. Offset printing inks should only contain plasticiser resistant pigments (to avoid bleeding).

General Advice

If work is to be finished, but the printer is unaware which type of finishing is to be used, it is recommended to use printing inks which are both alkali and solvent resistant.

It is common knowledge, that in practice prints can be finished without any problems although the printing inks used do not comply with the previously mentioned resistance recommendations. However, these results are dependant upon the through drying of the inks, the substrate, and other processing details. It should not be assumed, that the printing inks used will produce the same finishing results under other conditions.

The printing ink manufacturer will reject all claims which result from the use of non resistant inks being used for coating or lamination finishing. For this reason, we strongly emphasise the resistance properties problem.

The resistance properties of individual inks are clearly indicated on the ink can labels.

The resistance properties of printing inks are not a declaration about the general suitability of a print for finishing. The coating application and adhesion, the film adhesion, etc are dependant upon other factors such as the substrate used, the drying properties of the ink, the time scale and details of the print finishing process, etc. For these reasons this leaflet does not constitute a properties assurance of the inks delivered. The information contained herein is based upon our current knowledge assuming normal conditions.